REMARKS

In response to the Office Action dated January 21, 2003, claims 1, 11 and 14 have been amended. Claims 1-20 remain in the case. Reexamination and reconsideration of the application, as amended, are requested.

The Office Action objected to the specification as failing to provide antecedent basis for the claimed subject matter. Specifically, the Examiner stated that the term "bubble reduction device" and the phrase "expulsion of the air bubbles from the printhead with clogging" were not provided in the specification. Also, the Office Action objected to claims 1-10 due to informalities relating to the above phrase.

In response, the Applicants have amended claims 1, 11 and 14 to delete the term "bubble reduction device" and to replace the phrase "expulsion of the air bubbles from the printhead with clogging" with the amended phrase --expulsion of the ink from the printhead with clogging-- to overcome this objection.

The Office Action rejected claims 1-9 and 14-20 under 35 U.S.C. § 103(a) as being unpatentable over Ishinaga et al. in view of Kawanabe et al. (U.S. Patent No. 6,219,153) and Winzer et al. (U.S. Patent No. 5,629,578). Also, the Office Action rejected claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Ishinaga et al. in view of Kawanabe et al. and Winzer and further in view of Kato et al. Further, the Office Action rejected claims 11-13 under 35 U.S.C. § 103(a) as being unpatentable over Ishinaga et al. in view of Kawanabe et al. and Barteck (U.S. (Patent No. 4,403,229).

The Applicants respectfully traverse these rejections based on the amendments to the claims and the arguments below.

Specifically, claims 1 and 14 include "...a controller that uses the sensed temperatures to control temperature variations of the die sectors...to be within a predefined range from a starting point of a print swath to an end point of the print swath and successive print swaths of pigmented ink...wherein air bubble growth rates and bubble size are minimized within the printhead to enable expulsion of the ink from the printhead without clogging and wherein all of the die sectors are kept at an optimal temperature, including die sectors that are inactive during the print swath."

Next, claim 11, the Applicants' claimed invention is a **method** that includes "...controlling temperature variations of the die sectors of the printhead to be within a predefined range from a starting point of a print swath to an end point of the print

swath and successive print swaths of pigmented ink...and...minimizing air bubble growth rates and bubble sizes within the printhead to enable expulsion of the ink from the printhead without clogging when pigmented ink is used and wherein all of the die sectors are kept at an optimal temperature, including die sectors that are inactive during the print swath."

With regard to the rejection of claims 1-9 and 14-20, in contrast, the cited references, **in combination**, do **not** teach, suggest or disclose all of the Applicant's limitations. Namely, Ishinaga et al. merely disclose a "...liquid jet recording substrate and the liquid jet recording head and apparatus using the same wherein the problem arising from the temperature gradient produced in the substrate are solved and wherein temperature detection and temperature control can be performed with high accuracy and with quick response." Further, Kawanabe et al. simply disclose "...a system that chooses between a pigmented ink or a dye ink based on input data" while Winzer et al. merely disclose a "...composite acoustic transducer array."

However, clearly, Ishinaga et al., Kawanabe et al. and Winzer et al. in combination do **not** disclose the Applicants' "...controller that uses the sensed temperatures to control temperature **variations of the die sectors**...to be within a predefined range from a starting point of a print swath to an end point of the print swath and successive print swaths of pigmented ink...and wherein air bubble growth rates and bubble size are minimized...and...wherein **all of the die sectors** are kept at an optimal temperature, **including die sectors that are inactive during the print swath**."

In addition, with regard to claim 11, Ishinaga et al. do **not** disclose the Applicants' claimed **method** of "...controlling temperature variations of the **die sectors**...from a starting point of a print swath to an end point of the print swath and successive print swaths of pigmented ink...and...minimizing air bubble growth rates and bubble sizes within the printhead...and wherein **all** of the die sectors are kept at an optimal temperature, including die sectors that are inactive during the print swath."

Next, with regard to the remaining rejections, the remaining references add nothing to the cited combination that would render the Applicants' claimed invention obvious.

For instance, Kawanabe et al., Winzer et al. and Kato et al., **in combination with** Ishinaga et al. **or each taken alone**, do **not** teach, suggest or disclose the Applicants' claimed "...controlling temperature variations of the **die sectors**...from a

starting point of a print swath to an end point of the print swath and successive print swaths of pigmented ink...and...minimizing air bubble growth rates and bubble sizes within the printhead...and wherein **all** of the die sectors are kept at an optimal temperature, including die sectors that are inactive during the print swath."

Therefore, a prima facie case of obviousness **cannot** be established because the combination of cited references is missing a limitation of the claimed invention, and thus, the rejections must be withdrawn. ACS Hospital Systems, Inc. v. Montefiore Hospital (MPEP 2143.01).

With regard to the dependent claims, because they depend from the above-argued respective independent claims, and they contain additional limitations that are patentably distinguishable over the cited references, these claims are also considered to be patentable (MPEP § 2143.03).

Thus, it is respectfully requested that all of the claims be allowed based on the amendments and arguments. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. Additionally, in an effort to further the prosecution of the subject application, the Applicants kindly invite the Examiner to telephone the Applicants' attorney at (818) 885-1575 if the Examiner has any questions or concerns. Please note that all correspondence should continue to be directed to:

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P.O. Box 272400
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Respectfully submitted,
Dated: May 21, 2003

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

The following are marked-up versions of claim 1, 11 and 14:

1. (Three Times Amended) A printing system receiving input data for printing images on a print media, comprising:

an inkjet printhead having a body and ink ejection devices located on a substrate, each being associated with one of plural die sectors;

a temperature sensor that senses **[**the**]** temperatures of the plural die sectors and other portions of the inkjet printhead; and

a controller that uses the sensed temperatures to control temperature variations of the die sectors and at other portions of the printhead to be within a predefined range from a starting point of a print swath to an end point of the print swath and successive print swaths of pigmented ink

wherein air bubble growth rates and bubble size are minimized within the printhead to enable expulsion of the ink from the printhead without clogging and wherein all of the die sectors are kept at an optimal temperature, including die sectors that are inactive during the print swath**[**;

a bubble reduction device coupled to the controller that minimizes air bubble growth rates and bubble size within the printhead to enable expulsion of the air bubbles from the printhead without clogging**]**.

11. (Three Times Amended) A method for printing images with an inkjet printhead on a print media from a printing system having heating elements located on a substrate, the method comprising:

receiving **[**a**]** temperature values of plural die sectors having a set of ink ejection elements of the substrate before printing begins;

comparing the temperature values with **[**a**]** set points for printing for each die sector;

initiating the heating elements **[**if the**]** associated with the die sectors that have temperatures **[**is**]** below a predetermined printing threshold;

turning off the heating elements associated with the die sectors that have temperatures below a predetermined printing threshold when the threshold temperature of the substrate has been reached;

controlling temperature variations of the die sectors of the printhead to be within a predefined range from a starting point of a print swath to an end point of the print swath and successive print swaths of pigmented ink; and

minimizing air bubble growth rates and bubble sizes within the printhead to enable expulsion of the [air bubbles] ink from the printhead without clogging when pigmented ink is used and [the temperature variations are controlled] wherein all of the die sectors are kept at an optimal temperature, including die sectors that are inactive during the print swath.

14. (Three Times Amended) A large array inkjet printing apparatus that prints pigmented ink, comprising:

a monolithic substrate defining a printhead;

a large array of ink ejection elements formed on the substrate, each being associated with one of plural die sectors;

a nozzle member coupled to the substrate; and

a controller that controls temperature variations of the die sectors and at other portions of the printhead to be within a predefined range from a starting point of a print swath to an end point of the print swath and successive print swaths of pigmented ink

wherein air bubble growth rates and bubble size are minimized within the printhead to enable expulsion of the ink from the printhead without clogging and wherein all of the die sectors are kept at an optimal temperature, including die sectors that are inactive during the print swath[; and

a bubble reduction device coupled to the controller that minimizes air bubble growth rates and bubble size within the printhead to enable expulsion of the air bubbles from the printhead without clogging].